

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A circuit designing apparatus comprising:
  - a logic verification unit configured to perform a logic verification by inputting a plurality of test vectors necessary for the logic verification to a circuit description defining a structure and a specification of a circuit to be designed and comparing an output signal and an expected value of the output signal, and judging the validity of the circuit description;
  - a profile information generating unit configured to store information about a plurality of logic cones in the circuit description to be ~~activated~~ passed by the test vectors during the logic verification, in ~~every~~ each test vector, as profile information;
  - a circuit changing unit configured to change the circuit description after the logic verification and to generate a changed circuit description;
  - a logic cone specifying unit configured to specify changed logic cones of the changed circuit description, based on a result of a formal verification; and
  - a test vector classifying unit configured to classify the test vectors into test vectors ~~activating~~ that pass through the changed logic cones and test vectors that do not activating pass through the changed logic cones, using based on the profile information,

wherein the logic verification unit performs the logic verification of the changed circuit description, ~~using~~ based on the test vectors ~~activating~~ that pass through the changed logic cones.

2. (Previously presented) The circuit designing apparatus of claim 1, further comprising:

a logic cone dividing unit configured to divide the circuit description into the logic cones; and

a formal verification unit configured to verify logic by formal technology using the circuit description and the changed circuit description.

3. (Currently amended) A circuit designing method comprising:  
performing a logic verification by inputting a plurality of test vectors necessary for the logic verification to a circuit description defining a structure and a specification of a circuit to be designed and comparing an output signal and an expected value of the output signal, and judging the validity of the circuit description;

storing information about a plurality of logic cones in the circuit description to be ~~activated~~ passed by the test vectors during the logic verification, in ~~every~~ each test vector, as profile information;

changing the circuit description after the logic verification;

generating a changed circuit description;

specifying changed logic cones of the changed circuit description based on a result of a formal verification;

classifying the test vectors into test vectors ~~activating~~ that pass through the changed logic cones and test vectors that do not activating pass through the changed logic cones, ~~using~~ based on the profile information; and

performing a logic verification of the changed circuit description, ~~using~~ based on the test vectors ~~activating~~ that pass through the changed logic cones.

4. (Previously presented) The circuit designing method of claim 3, further comprising:

dividing the circuit description into the logic cones; and

verifying logic by formal technology using the circuit description and the changed circuit description.

5. (Currently amended) The circuit designing method of claim 3, wherein the logic verification of the changed circuit description is executed by using preferentially the test vectors ~~activating~~ that pass through the changed logic cones.

6. (Previously presented) The circuit designing method of claim 4, further comprising issuing a circuit description and processing circuit manufacture by using the circuit description.

7. (Previously presented) The circuit designing method of claim 5, further comprising issuing a circuit description and processing circuit design and manufacture by using the circuit description.

8. (Currently amended) A computer-readable recording medium storing a circuit designing program comprising and making a computer execute:

instructions configured to perform a logic verification by inputting a plurality of test vectors necessary for the logic verification into a circuit description defining a structure and a specification of a circuit to be designed and comparing an output signal and an expected value of the output signal, and judging the validity of the circuit description;

instructions configured to store information about a plurality of logic cones in the circuit description to be ~~activated~~ passed by the test vectors during the logic verification, in ~~every~~ each test vector, as profile information;

instructions configured to change the circuit description after the logic verification and to generate a changed circuit description;

instructions configured to specify changed logic cones of the changed circuit description based on a result of a formal verification;

instructions configured to classify the test vectors into test vectors ~~activating~~ that pass through the changed logic cones and test vectors that do not activating pass through the changed logic cones, ~~using~~ based on the profile information; and

instructions configured to perform a logic verification of the changed circuit description, ~~using~~ based on the test vectors ~~activating~~ that pass through the changed logic cones.

9. (Currently amended) The computer-readable recording medium storing a circuit designing program of claim 8, wherein the logic verification of the changed circuit description is executed by using preferentially the test vectors ~~activating~~ that pass through the changed logic cones.

10. (Previously presented) The computer-readable recording medium storing a circuit designing program of claim 8, further comprising and making the computer execute:

instructions configured to output a circuit description,

wherein circuit manufacture is processed by using the circuit description.

11. (Previously presented) The computer-readable recording medium storing a circuit designing program of claim 8, further comprising and making the computer execute:

instructions configured to divide the circuit description into the logic cones; and

instructions configured to verify by formal technology using the circuit description and the changed circuit description.

12. (Currently amended) The circuit designing apparatus of claim 1, wherein the logic verification of the changed circuit description is executed by using preferentially the test vectors ~~activating~~ that pass through the changed logic cones.

13. (Currently amended) The circuit designing apparatus of claim 1, wherein the second and subsequent logic verifications are executed by using only the test vectors ~~activating~~ that pass through the changed logic cones.

14. (Previously presented) The circuit designing apparatus of claim 2, wherein the logic cone specifying unit specifies the changed logic cones on the basis of a result of the formal verification.

15. (Currently amended) The circuit designing method of claim 3, wherein the second and subsequent logic verifications are executed by using only the test vectors ~~activating~~ that pass through the changed logic cones.

16. (Currently amended) The computer-readable recording medium storing a circuit designing program of claim 8, wherein the second and subsequent logic verifications are executed by using only the test vectors ~~activating~~ that pass through the changed logic cones.